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The *minus* sign indicates merely difference in these expressions, thus avoiding negative terms. In some of the calculations the differences are but a repetition of the sums.

To continue the series, the value of  $m$  is the next succeeding value of  $n$ , and the value of  $m+n$  is the next succeeding value of  $\sqrt{(2n^2 \pm d)}$ .

Take  $d=1=2 \times 1^2 - 1^2$ . Then  $r=1$  and  $s=1$ . Whence,  $n=1, 2, 5, 12, 29$ , etc.;  $m=2, 5, 12, 29, 70$ , etc.

Substituting these values in  $(2mn)^2 + (m^2 - n^2)^2 = (m^2 + n^2)^2$ , we find the following right triangles in which the difference of the legs is 1: 4, 3, 5; 20, 21, 29; 120, 119, 169; 696, 697, 985; 4060, 4059, 5741; etc.

Take  $d=7=2 \times 2^2 - 1^2$ . Then  $r=2$  and  $s=1$ . Whence  $n=2, 1, 3, 4, 8, 9, 19, 22$ , etc.;  $m=3, 4, 8, 9, 19, 22, 46, 53$ , etc.

The right triangles are 12, 5, 13; 8, 15, 17; 48, 55, 73; 72, 65, 97; 304, 297, 425; 396, 403, 565; etc.

The sides of another set of triangles will be 7 times the sides of those the difference of whose legs is 1; as, 28, 21, 35; 140, 147, 203; 840, 833, 1183; etc.

#### REMARK ON PROBLEM 98, BY CHARLES C. CROSS, WHALEYVILLE, VA.

The solution given by Dr. Drummond of the second part of this problem does not appear to me to satisfy all the required conditions.

Let  $x$  and  $y$  be the numbers. Then

$$x+1 = \square = a^2 \text{ (say)} \dots \dots (1); \quad y+1 = \square = b^2 \text{ (say)} \dots \dots (2);$$

$$x+y+1 = \square = c^2 \text{ (say)} \dots \dots (3); \quad x-y+1 = \square = d^2 \text{ (say)} \dots \dots (4).$$

(1) and (2) in (3) and (4) give  $a^2 + b^2 - 1 = c^2$  and  $a^2 - b^2 + 1 = d^2$ ; adding  $2a^2 = c^2 + d^2$ . Let  $c = m+n$  and  $d = m-n$ , then  $a^2 = m^2 + n^2$ . Let  $a^2 = (p^2 + q^2)^2$ ,  $m^2 = (p^2 - q^2)^2$ , and  $n^2 = (2pq)^2$ . Then  $c = p^2 - q^2 + 2pq$ , and  $d = p^2 - q^2 - 2pq$ . Therefore  $x = (p^2 + q^2)^2 - 1$ , and  $y = 4pq(p^2 - q^2)$ .

In order that this value of  $y$  may satisfy the conditions of the problem,  $p^2 - q^2$  must equal  $pq \pm 1$ . Whence  $q = [\sqrt{(5p^2 \pm 4)} - p]/2$  in which  $5p^2 \pm 4$  is to be made a square.

Let  $p=2$ , then  $q=1$ .  $\therefore x=24$ ,  $y=24$ .

Let  $p=3$ , then  $q=2$ .  $\therefore x=168$ ,  $y=120$ .

Whence  $x+1=13^2$ ;  $y+1=11^2$ ;  $x+y+1=17^2$ ; and  $x-y+1=7^2$ . And so on for other values of  $p$ .

#### 101. Proposed by HARRY S. VANDIVER, Bala, Pa.

Prove that it is impossible to find integral values for  $x$ ,  $y$ , and  $z$  such that the relation  $x^2y + xz^2 = y^2z$  is satisfied.

Solution by the PROPOSER.

Suppose that  $x$ ,  $y$ , and  $z$  are integers that satisfy  $x^2y + xz^2 = y^2z$ ....(1), then we find